LISTING OF THE CLAIMS

1. (Currently Amended) A method of determining impulse responses of a medium in relation to the transmission of waves between different points, method comprising:

(a) at least one step of emission in the course of which waves are emitted into the medium by generating signals ei(t) on the basis of a number N of emission points included in the medium, where N is an integer at least equal to 2 and i is an index lying between 1 and N which designates one of said N emission points, <u>the signals ei(t) being generated by N number of transducers;</u>

(b) at least one step of reception in the course of which signals rj(t) are picked up from said waves after transmission in said medium, at a number M of reception points included in the medium, where M is a non-zero natural integer and j is an index lying between 1 and M which designates one of said M reception points, <u>the signals rj(t) being picked up by N number of transducers;</u>

(c) and at least one step of determination of said impulse responses hij(t) between each emission point i and each reception point j on the basis of the signals emitted ei(t) and picked up rj(t), <u>the impulse responses hij(t) being determined by a control device connected to the transducers;</u>

wherein during the course of step (a), said N emission points are made to simultaneously emit the signals ei(t), these signals ei(t) being orthogonally coded so as to be orthogonal to one another and such that the information specific to each emission point may thereafter be separated from the other information in the signals picked up rj(t), and having a duration T and each being a sum of n substantially monochromatic elementary signals, of like amplitude and of respective frequencies $f_{0,i}+k.\delta f$, where $f_{0,i}$ is a predetermined eigenfrequency at the point i, k is an integer lying between 0 and n, n is an integer at least equal to 2 and δf is a predetermined frequency interval, the respective eigenfrequencies $f_{0,i}$ at the various points i being distinct and lying in a frequency band of width δf, the frequency $f_{0,i}$ for each signal ei(t) being different for the N emission points,

and wherein during the course of step (c), each impulse response hij(t) is calculated on the basis of a signal of correlation between the signal ei(t) emitted at the point i and the signal rj(t) picked up at the point j.

2. (Original) The method as claimed in claim 1, in which the respective eigenfrequencies $f_{0,i}$ at the various points i are separated pairwise by an offset $\delta f/N$.

3. (Previously Presented) The method as claimed in claim 1, in which, in the course of step (c), said correlation signal is windowed by means of a gate function $\pi(t)$ of width $1/\delta f$.

4. (Original) The method as claimed in claim 3, in which, in the course of step (c), the impulse responses hij(t) are determined through the formula:

$$hij(t) = \Pi(t) \, . \int ei(\theta - t) \, .rj(\theta) d\theta \, .$$

5. (Previously Presented) The method as claimed in claim 1, in which the waves transmitted in the medium between the emission points and the reception points are acoustic waves.

6. (Previously Presented) The method as claimed in claim 1, in which, in the course of step (a), the medium where the waves are emitted is reverberant.

7. (Previously Presented) The method as claimed in claim 1, in which the frequency interval δf is less than or equal to $1/\tau$, where τ is the temporal dispersion of the medium.

8. (Original) The method as claimed in claim 7, in which the frequency interval δf is substantially equal to $1/\tau$, where τ is the temporal dispersion of the medium.

9. (Previously Presented) The method as claimed in claim 1, in which the duration T is at least equal to $N/\delta f$.

10. (Previously Presented) The method as claimed in claim 1, in which the duration T is at least equal to N.τ, where τ is the temporal dispersion of the medium.

11. (Previously Presented) The method as claimed in claim 1, in which the elementary signals exhibit random phases.

12. (Previously Presented) The method as claimed in claim 1, in which the waves are emitted with a certain passband, the frequencies f0i comprise a minimum frequency f0 and the number n is determined so that the frequency band lying between f0 and f0+[(n+1).δf] substantially overlaps said passband.

13. (Previously Presented) The method as claimed in claim 1, in which the reception points are coincident with the emission points.

14. (New) <u>The method of claim 1, wherein the N transducers are acoustic wave transducers.</u>

15. (New) <u>The method of claim 1, wherein the N transducers are electromagnetic wave transducers.</u>